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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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04/14/2004

Gilles Arnaud

0595-1003

6229

466

7590

08/25/2006

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EXAMINER

HOLZEN, STEPHEN A

ART UNIT

PAPER NUMBER

3644

DATE MAILED: 08/25/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/823,582	ARNAUD, GILLES	
	Examiner	Art Unit	
	Stephen A. Holzen	3644	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 06 June 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-11 and 13-21 is/are pending in the application.
- 4a) Of the above claim(s) 2, 4 and 6 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1, 3, 5, 7-11, 13-21 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Response to Arguments

1. Applicant's arguments filed 6/6/2006 have been fully considered but they are not persuasive.
2. Applicant has identified a typographical error in the Office Action Summary mailed on 3/15/2006. The examiner did not allow any claims. Apparently applicant recognized that the examiner made a typographical error, since the applicant amended the claims and presented arguments against the rejection presented in the Detailed Action.

Applicant has argued that it would not have been obvious to optimize the flap shape, the angle, the location of the axis of rotation, and etc. The applicant has not presented any evidence to support these assertions. Arguments of counsel may be effective in establishing that an examiner has not properly met his or her burden or has otherwise erred in his or her position. In these situations, an examiner may have failed to set forth any basis for questioning the adequacy of the disclosure or may not have considered the whole specification, including the drawings and the written description. However, it must be emphasized that arguments of counsel alone cannot take the place of evidence in the record once an examiner has advanced a reasonable basis for questioning the disclosure. See *In re Budnick*, 537 F.2d at 538, 190 USPQ at 424; *In re Schulze*, 346 F.2d 600, 145 USPQ 716 (CCPA 1965); *In re Cole*, 326 F.2d 769, 140 USPQ 230 (CCPA 1964).

Re – Claims 18 and 19: These claims are not limited by 112 6th paragraph because they do not meet the three prong test required to protected by 112 6th paragraph. The “means for” language is modified by structured. See for example where the applicant modified the phrase “means for sealing” by a “longitudinally extending filling”. Additionally, applicant’s claims do not require a complete seal between the flap and the hinge. Miller reads on the present limitation where there is a partial seal.

Finally Miller’s seal does extend in the longitudinal direction of flight, contrary to applicant’s assertions.

Background of Airfoil Shape

3. An airfoil is the shape of a wing or blade as seen in cross-section. Airfoils are passed through air in order to provide either positive or negative lift. Subsonic-flight airfoils are characterized by a rounded leading edge, followed by a sharp trailing edge, and often with camber. The camber in aerospace engineering is the asymmetry between the top and the bottom curves of an airfoil. Cambered airfoils generate lift at positive, zero, or even small negative angle of attack, whereas a symmetric airfoil only has lift at positive angles of attack. The amount of lift generated by an airfoil depends on how much the flow is turned, which depends on the airfoil’s shape. In general, the lift is a very complex function of the shape. Aerodynamicists model the shape effect by a lift coefficient, which is normally determined through wind tunnel testing.

The Glenn Research Center (www.grc.nasa.gov) illustrates the shape effects on lift on their website (please see: www.grc.nasa.gov/WWW/K-12/airplane/shape.html).

The airfoil on the left is a symmetric airfoil; the shapes above and below the white centerline are the same. The example shown explains why the aft portion of wings have hinged sections to control and maneuver an aircraft. Deflecting the aft section down produces geometry similar to the figure on the right producing more lift. Similarly, if the aft section is deflected up, it creates less lift (or even negative lift). The ability to vary the amount of lift over a portion of the wing gives the pilot the ability to maneuver an aircraft. The main point that one takes away from reading the Glenn Research Center website is that wings and flaps can be designed to having a plurality of different shapes, and that an engineer will design a wing/flap to suit the purpose for which the wing/flap needs to serve.

4. As best understood, applicant's invention is drawn to a symmetrical airfoil (wing) having a symmetrical flap/slat/aileron (flap) forwardly hinged to the aft section of the symmetrical wing.

The applicant's claims rely heavily on the wing/flap dimensions and shapes.

Claim Rejections - 35 USC § 103

5. Claims 1, 3, 5, 7-17, and 20-21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Phillips (6,970,773) in view of Munoz Saiz (6,109,567). Phillips discloses in FIG. 1G how to determine flap ratio for a wing 80 having a flap 82. The

Art Unit: 3644

local chord length c is measured from the leading edge 84 to the trailing edge 86. The local flap chord length is measured from the front edge of the flap to the trailing edge 86. Figure 1F teaches that it is well known in the art to locate more than one flap on a single wing. Figure 1G further illustrates a symmetrical wing and a symmetrical flap. The wing has a leading edge that has an elliptical cross section and a clearance between the wing's trailing edge and the flap's leading edge. Neither the wing nor the flap has a concave shape. Phillips does not specifically disclose a rounded edged forwardly hinged flap and a clearance overhang. Saiz however teaches that it is well known in the art to hinge a symmetrical flap to the aft edge of the wing, to have an elliptical recess within the wing and to insert the elliptical leading edge of the flap into the recess (thus creating the clearance overhang). It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the flap of Phillips as taught by Saiz for the purpose of degreasing overall wing/flap drag.

- a. Neither Saiz nor Phillips discloses the specific/exact dimension claimed by the applicant. However as discussed above, aeronautical engineers have for years modified the shape of the airfoils to alter the lift & drag of airfoils and flaps.
- b. It would have been obvious to one having ordinary skill in the art at the time the invention was made to design
 - i. design the wing and/or flap to have a first major axis to minor axis quotient not less than 1.5

- ii. design the wing and/or flap to have a main angle (α) = 20 degrees
- iii. design the wing and/or flap to have a second major axis to minor axis quotient approximately equal to 1.5
- iv. design the wing and/or flap to have a second major axis to minor axis quotient equal to 2
- v. situate the axis of rotation of the flap at a first distance from the first leading edge corresponding more or less to 25.5% of the Chord
- vi. to include the clearance between 1.5% and 3.% of the chord of the flap
- vii. to design the clearance such that it corresponds to approximately 2% of the flap chord
- viii. to design the clearing such that it is included between .4% and .8% of the total length separating a second leading edge from the first trailing edge
- ix. to design the clearance such that it corresponds to approximately 0.5% of the total length
- x. to design the partial overlap of the first leading edge and the second trailing edge such that it is located less than 10% of the cord of the flap.
- xi. to design each of the flap such that they are less than or equal to 15% of the second span distance and

- xii. to design the first span of each flap such that it is included between 7% and 10% of said second span of said lifting surface

since it has been held that discovering an optimum value of a result effective variable involves only routine skill in the art. In re Boeson, 617 F. 2d 272, 205 USPQ 215 (CCPA 1980)

The rationale to modify or combine the prior art does not have to be expressly stated in the prior art; the rationale may be expressly or impliedly contained in the prior art or it may be reasoned from knowledge generally available to one of ordinary skill in the art, established scientific principles, or legal precedent established by prior case law. In re Fine, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988); In re Jones, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992). See also In re Kotzab, 217 F.3d 1365, 1370, 55 USPQ2d 1313, 1317 (Fed. Cir. 2000)

In re Rose , 220 F.2d 459, 105 USPQ 237 (CCPA 1955) (relating to the size of a structure were not sufficient to patentably distinguish over the prior art.); In re Rinehart, 531 F.2d 1048, 189 USPQ 143 (CCPA 1976) (mere scaling of the prior art would not establish patentability in a claim; 531 F.2d at 1053, 189 USPQ at 148.).

In *Gardner v. TEC Systems, Inc.*, 725 F.2d 1338, 220 USPQ 777 (Fed. Cir. 1984), cert. denied, 469 U.S. 830, 225 USPQ 232 (1984), the Federal Circuit held that, where the only difference between the prior art and the claims was a recitation of relative dimensions of the claimed device and a device having the claimed relative dimensions would not perform differently than the prior art device, the claimed device was not patentably distinct from the prior art device.

In *re Dailey*, 357 F.2d 669, 149 USPQ 47 (CCPA 1966) (The court held that the Configuration of the claimed device was a matter of choice, which a person of ordinary skill in the art would have found obvious absent persuasive evidence that the particular configuration of the claimed device was significant.).

One having ordinary skill in the art, in light of the above-cited case law, would conclude that that simply altering and claiming the dimensions of a known structure (wing and flap combination) for use in a substantially similar manner would be an obvious modification of this structure (wing flap combination).

6. Claims 18 and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Phillips (6,970,773) in view of Munoz Saiz (6,109,567) as applied to claim 1 above, and further in view of Miller et al (6,764,047). Neither Phillips nor Munoz Saiz disclose a filler between the flap and the wing. Miller et al however teaches that it is known to use flexible string hinges to couple between the flap and wing that effectively "seal off" (at

Art Unit: 3644

least partially) the opening between the flap and the wing. It would have been obvious to one having ordinary skill in the art, at the time the invention was made to use the hinges of Miller et al in the flap and wing combination of Phillips for the purpose of decreasing overall aircraft weight.

Claim Objections

7. Claims 11, 13, 15 and 17 are objected to because of the following informalities:

Re – Claim 11: The phrase “more or less” does not clearly define the metes and bounds of the claim.

Re - Claim 13: the phrase “according to **the** claim 1” appears to have words missing and therefore the scope cannot be determined. What is the purpose of the word “the” in this claim?

Re - Claim 15: the phrase “according to **the** claim 14” appears to have words missing and therefore the scope cannot be determined. What is the purpose of the word “the” in this claim?

Re - Claim 17: the phrase “according to **the** claim 16” appears to have words missing and therefore the scope cannot be determined. What is the purpose of the word “the” in this claim?

Appropriate correction is required.

Conclusion

8. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.


Any inquiry concerning this communication or earlier communications from the examiner should be directed to Stephen A. Holzen whose telephone number is 571-272-6903. The examiner can normally be reached on M-F 8:30-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Teri Luu can be reached on 571-272-7045. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 3644

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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